955448

Upgradient Slurry Wall Historical Data Summary

Velsicol Chemical Corporation Superfund Site

Former Plant Area – OU-1

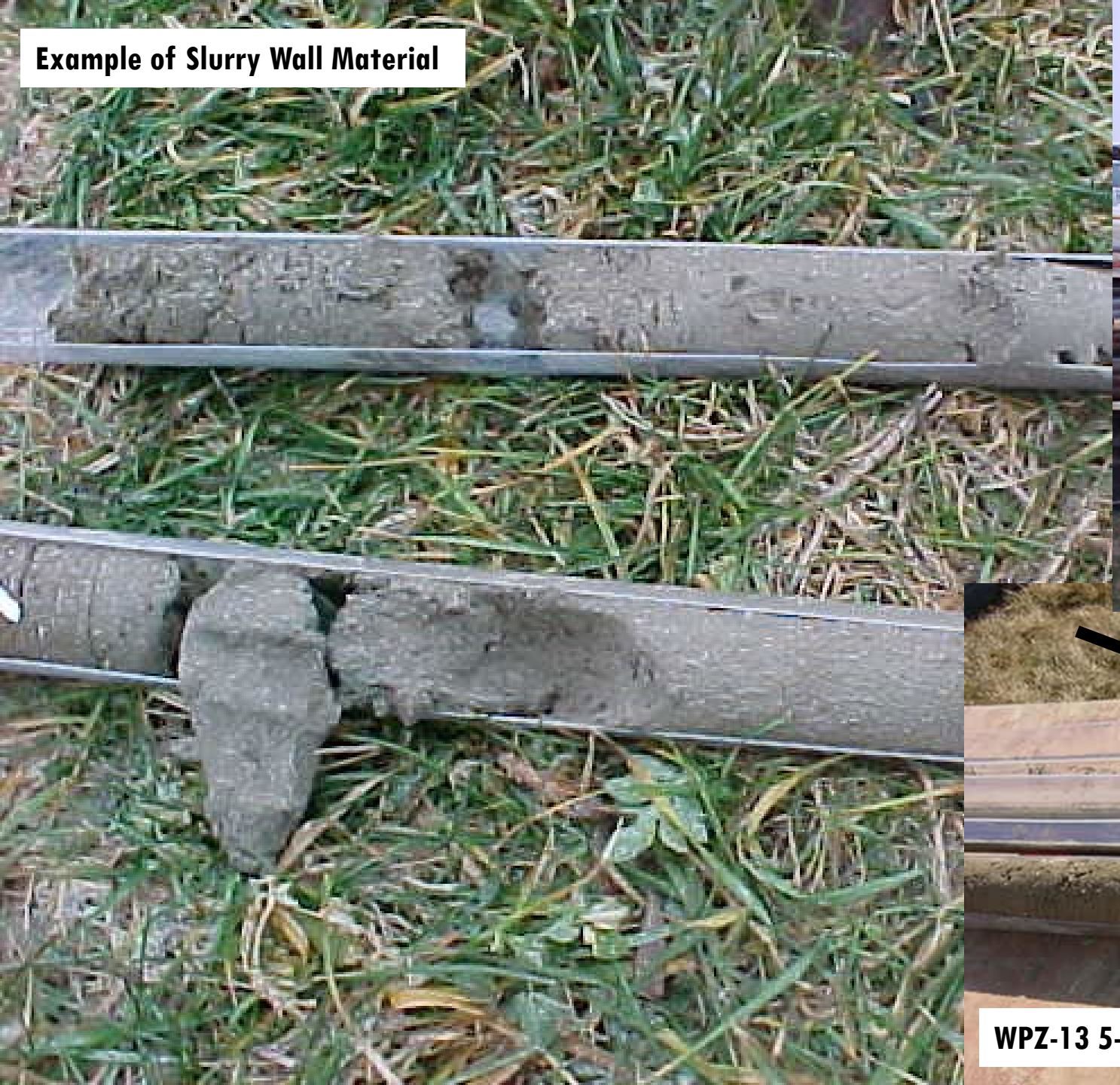
Plant Site in Operation – 1970s

Plant Decommissioning – 1982

Slurry Wall Installation – 1983

Slurry Wall Effectiveness Concerns

- Increasing water levels inside groundwater containment system
  - 2.53 million gallons water removed between 1993-1994
- Increasing DDT levels in fish within the impoundment
  - 1994-1995 fish sample DDT concentrations doubled since 1989

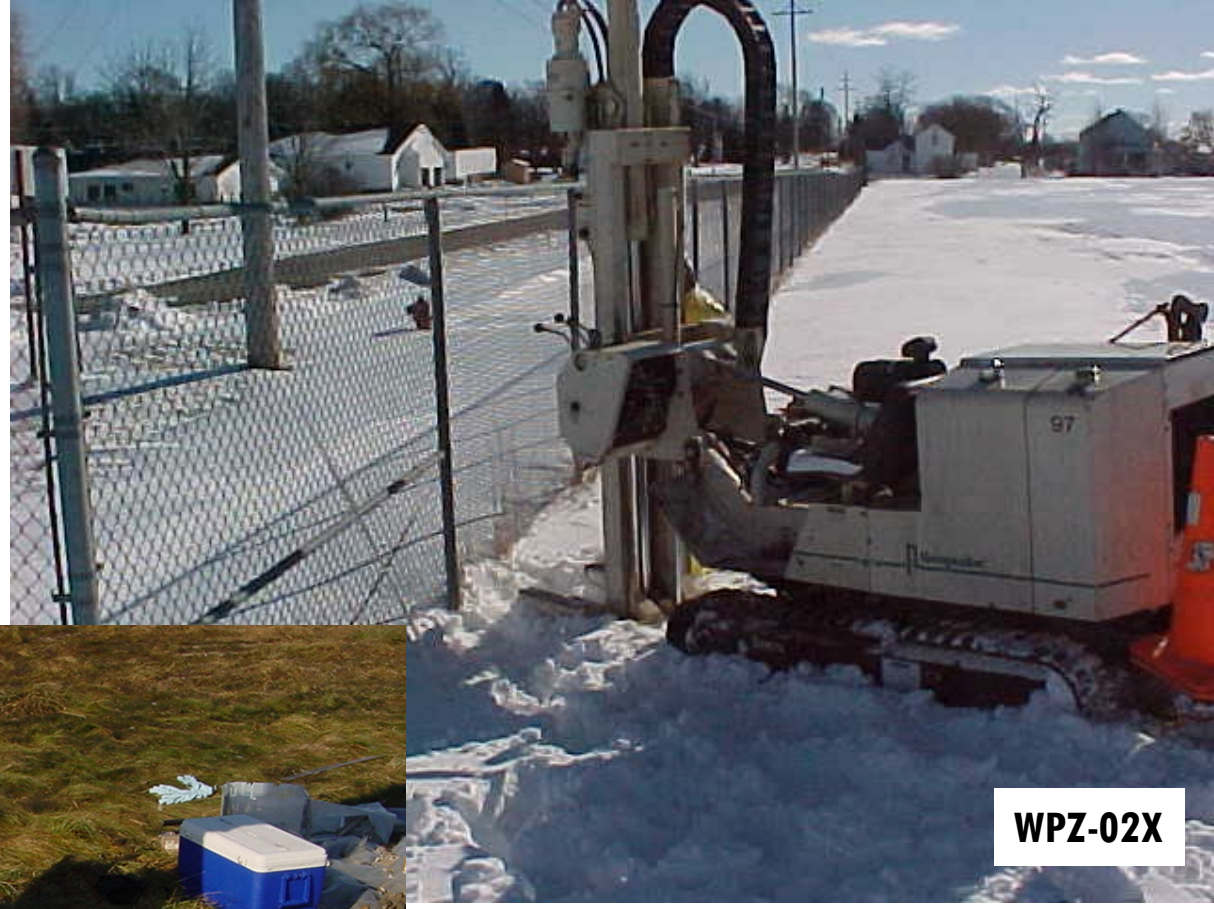


Example of Slurry Wall Material

WPZ-01 Slurry Wall Boring

WPZ-13 5-10 ft Slurry Wall Material

WPZ-13I and WPZ-13X



WPZ-02X

Piezometer Installation

Summary

- Dye Tests
  - Did not show leakage on upgradient side (only 2 locations tested)
- Permeability
  - 3 locations (6 samples) failed
  - 2 locations (7 samples) passed
- Water Quality
  - Some Detections on upgradient side (outside the wall)
  - Widespread groundwater contamination not identified
  - Inconclusive if contamination was present prior to slurry wall installation
- Hydraulic Gradient
  - 2002-2008 both inward and outward gradients were observed

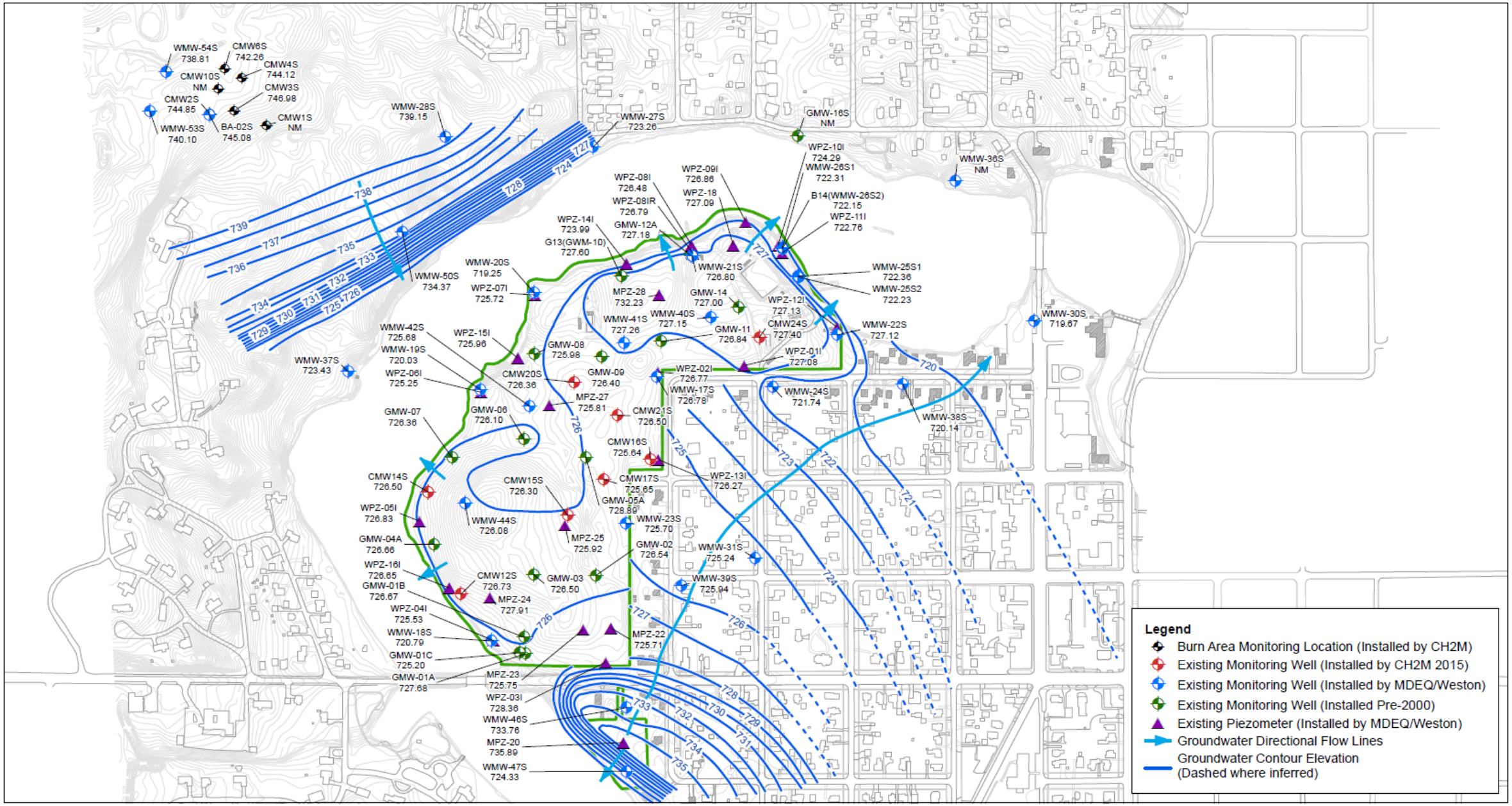
Major Takeaways

- MEC study concluded the wall was functioning
- MDEQ evaluation indicated portions of the wall (upgradient only) may be working – data was inconclusive and limited
- Hydrogeological setting has changed significantly since studies
- Spatial data gaps along upgradient portion of slurry wall
- Dye tests and hydraulic gradient monitoring preferred lines of evidence

Upgradient Slurry Wall Evaluation
Velsicol Chemical Superfund Site
August 21, 2019

Agenda

1. Objectives
2. Methodology
   - Piezometer installation and groundwater elevation data collection
   - Hydraulic conductivity sample collection and analysis
   - Dye tracer study
3. Data evaluation and reporting
4. Schedule



N

0 450 900 Feet

NOTES:

1. BASE MAP PROVIDED BY WESTON SOLUTIONS OF MICHIGAN, INC.
2. LAND SURVEY ELEVATIONS WERE REFERENCED TO NAVD OF 1988 FEET MSL. THE HORIZONTAL LOCATIONS WERE REFERENCED TO THE MICHIGAN STATE PLANE COORDINATE SYSTEM NAD83, INTERNATIONAL FEET - SOUTH (2113) ZONE.

Figure 3-8
Shallow Outwash Groundwater Elevation Contours - May 6, 2016
Velsicol Chemical Corporation Superfund Site
St. Louis, Michigan

ch2m:

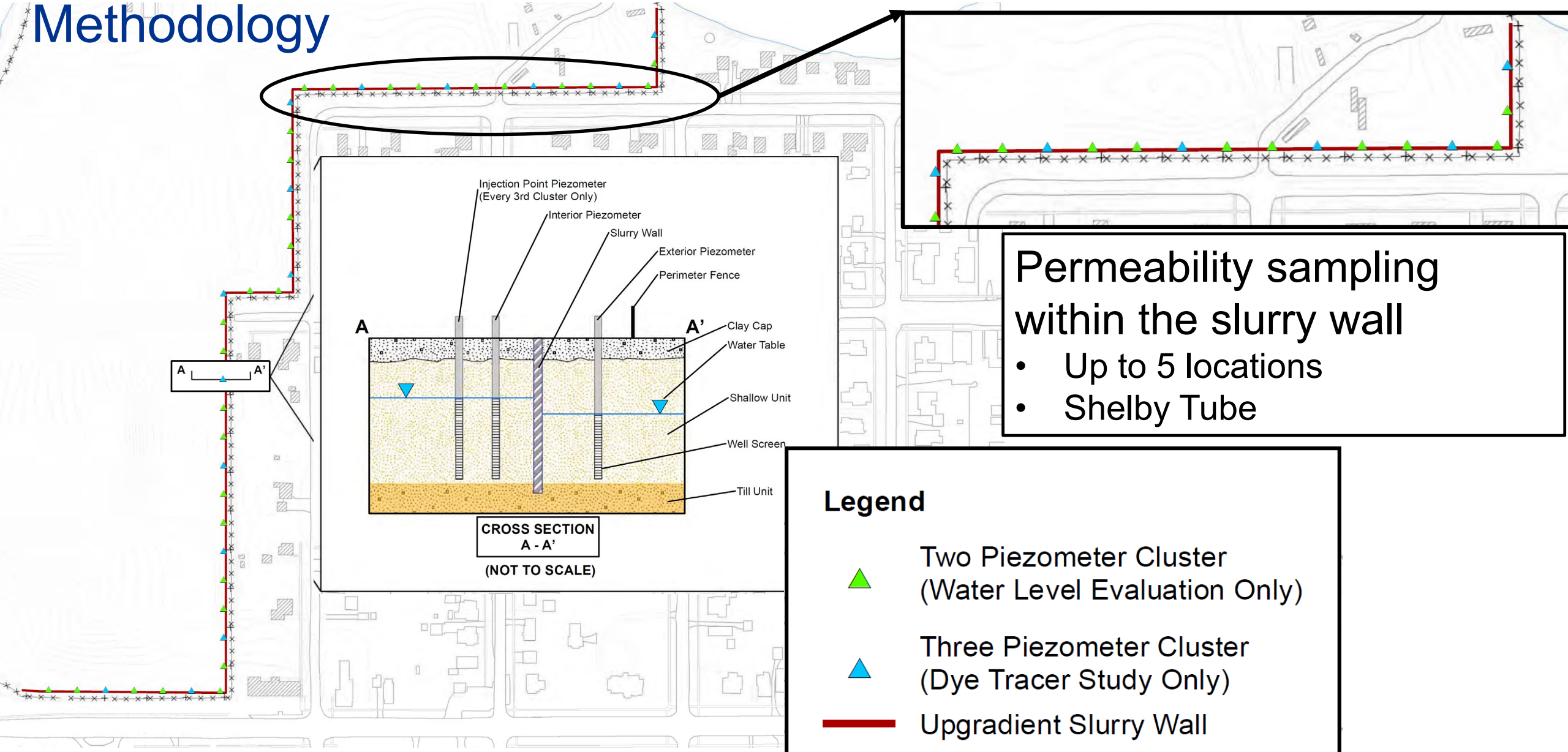
Objectives

- Evaluate the effectiveness of the upgradient slurry wall.
- Data evaluation to assist in design of perimeter containment and groundwater collection trench.
- Similar investigation methods to the previous slurry wall evaluations.
  - Memphis Environmental Center, Inc (MEC)
  - MDEQ/Weston Phase I and Phase II of the Remedial Investigation

Methodology

- Piezometer Installation and Groundwater Elevation Measurement
  - Direct push drilling (Geoprobe)
  - 45 piezometer clusters along the up-gradient slurry wall (UGSW).
    - Groundwater elevation measurements (30).
    - Dye tracer study (15).

Methodology



Permeability sampling within the slurry wall

- Up to 5 locations
- Shelby Tube

Legend

- Two Piezometer Cluster (Water Level Evaluation Only)
- Three Piezometer Cluster (Dye Tracer Study Only)
- Upgradient Slurry Wall
- Former Plant Site Fence

Methodology- Dye Tracer Study

- Charcoal dye receptors deployed to assess background dye presence.
- Dye selection and injection volume determined in consultation with the analytical laboratory.
- Tracer dye injection.
- Charcoal dye receptors deployed
- Charcoal dye receptors retrieved and replaced every two weeks for an initial period of 3 months.
- Based on the preliminary data-the sampling schedule may be extended for an additional 1 to 2 months.

Data Evaluation

- Dye receptor results -Presence or absence of the injection dye(s).
- Groundwater elevation differences interior vs exterior.
- Determine if additional design investigation is required.

Schedule

- Piezometer installation- September 2019
- Background dye evaluation-October 2019
- Dye Injections- Late October 2019
- Dye tracer sample collection- November 2019, December 2019, January 2020.
- Groundwater elevation measurement-throughout investigation.
- Reporting- February and March 2020
- Path forward- April 2020

Questions